

# UK Patent Application GB 2 390 956 A

(43) Date of A Publication 21.01.2004

(21) Application No:	0314508.3	(51) INT CL <sup>7</sup> : H04Q 7/22
(22) Date of Filing:	20.06.2003	(52) UK CL (Edition W ): H4L LDPC L209
(30) Priority Data: (31) 0214113	(32) 20.06.2002	(33) GB
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(72) Inventor(s): <b>Jeffrey Wilson</b>		(58) Field of Search: UK CL (Edition V ) H4L INT CL <sup>7</sup> G06F, H04B, H04L, H04M, H04Q Other: Online: WPI, EPODOC, PAJ, TXTE
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(54) Abstract Title: **Telecommunications services apparatus**

(57) A predefined arrangement of one or more predefined characters in one or more predefined positions in the body of a text message is recognised by a text message router 3. In response to that recognition, a function required by the sender of the text message is selected, so as to change the normal message delivery function of the text messaging system. The change in the message delivery function may include (i) a change in the message content; and/or (ii) a change in the routing of the message; and/or (iii) a change in the method of delivery. In one example, the router 3 may forward at least part of the message to an email interface 6 which then sends on the (part of the) message to a pre-selected email address. The email address may be obtained from a database 5.

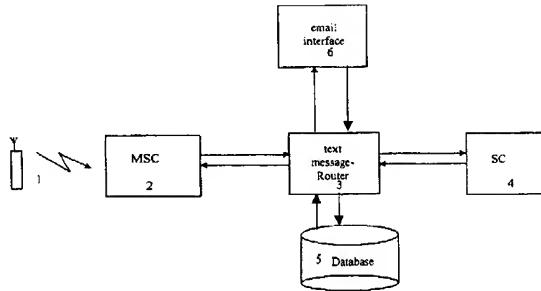
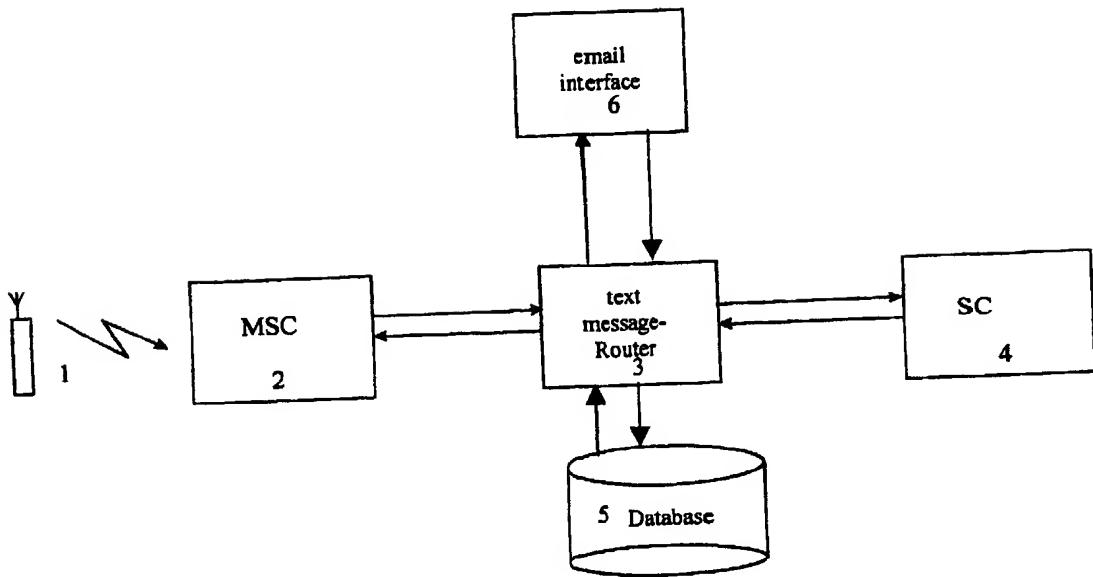


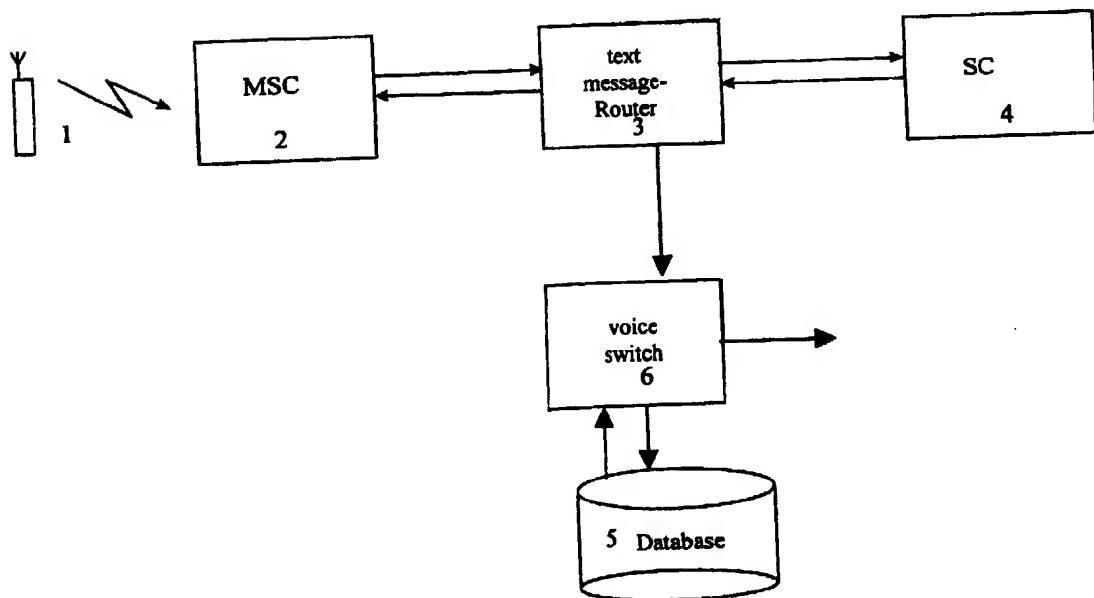
Figure 1

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**Figure 1**



**Figure 2**

TELECOMMUNICATIONS SERVICES APPARATUS

This invention relates to telecommunications services apparatus and methods, such as may be used in telecommunication networks and in particular in the context of text messaging services.

An example of a text messaging facility is used in the GSM mobile telephone system. In GSM the Short Message Services (SMS) allow Mobile Stations (MS) to send and receive short text messages. The messages are normally routed via a Short Message Service Centre (SMSC), which provides a store and forward function. The SMSC will attempt to deliver each message to its destination, which may be another MS or a host address in the same or another network.

Successful standardisation has permitted the global spread of mobile telecommunication networks. Handsets are manufactured that can be used in many networks in many countries. However, the standardisation process also slows down the introduction of new features in networks, and facilities available to users today are to a large extent constrained by the scope of the designs envisaged by those who formed the standards several years previously. Consequently some services or network facilities that are desirable today are not immediately available because their use was not previously envisioned during standardisation. Nevertheless it is still possible to introduce new services because of the richness and flexibility of those features that are available. Also, existing services can be used in new or specific ways to provide alternative behaviour and provide new services.

Text messaging has undergone enormous growth because it fulfils a basic communication need, complementing voice communication with the ability to send and receive short text messages. Text messaging is taken here as a generic term that includes similar forms of messaging including SMS, EMS, MMS and the like. Text messaging in GSM, using SMS, was primarily aimed at handset-to-handset communication, or network to handset communication for the purpose of alerting. The extensive use today for communication gives rise to a need for associated services that

allow text messages to be exchanged with other forms of media. However these exchanges are not well supported today, and their usage is not simple enough.

One key example of a beneficial service is the integration of Short Message and email services. It would be desirable to have an easy way to specify that a text message is to be delivered to an email address as well or instead of being delivered to a telephone address. This is possible in GSM today, but requires the sender to know the email address that relates to the destination number, to format the message in a specific way to identify the email address within the body of the text message and to remember a different number to which to send the message. Given all of these separate actions by the sender, the network is then capable of directing a text message to an email address. The complexity of the presently available model, and the differences from everyday text messaging, render the service little used in its present form.

One of the factors that has allowed the Internet to be so successful is the user-friendly naming scheme, whereby addresses are referenced by a meaningful name rather than by a non-memorable numeric value. In telephony, users already have an assigned telephone number. This number is likely to be known to friends and family, and regular contacts will probably have each other's numbers stored in a directory in their mobile communication devices. It would therefore be most convenient if telephony-related communications directed to a user made use of the user's telephone number, regardless of the medium or manner of the communication or service being invoked.

Present technology offers many means of communication with a user of a telecommunications system, but apart from the simplest forms of communication, services often require the sender to remember additional telephone numbers of systems or services. For example, the delivery of a pre-recorded birthday greeting to a friend currently requires the sender to dial a specific number to access a service. The details of the recipient are then entered interactively into the service. This type of process requires the communicator to know additional telephone numbers in order to invoke these services.

According to an aspect of the invention there is provided a telecommunications services apparatus for use with a telephone messaging system, the apparatus comprising:

5 means for recognising a predefined arrangement of one or more predefined characters in one or more predefined positions in the body of a message being submitted to the telephone messaging system; and

means responsive to recognition by the recognising means to select a function required by the sender of the message so as to change the normal message delivery function of the telephone messaging system thereby to provide a change in the message content  
10 and/or a change in the routing of the message and/or a change in the method of delivery.

According to one embodiment of the invention the changed message delivery function is operative to forward at least part of the message in appropriate format to a pre-selected email address.

15

According to another embodiment of the invention the changed message delivery function is operative to attempt message delivery one or more times to the destination address and in the event that such delivery is unsuccessful, to forward at least part of the message in appropriate format to a pre-selected email address.

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According to another embodiment of the invention the changed message delivery function is operative to attempt message delivery one or more times to the destination address and in addition to forward at least part of the message in appropriate format to a pre-selected email address.

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According to another embodiment of the invention the changed message delivery function is operative to attempt message delivery one or more times to the destination address such that the message is caused to appear automatically on the display of the destination terminal.

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According to another embodiment of the invention the changed message delivery function is operative to replace part or all of the message with information representative of the sender's address. In this case the embodiment may also preferably be operable to suppress delivery of the user's telephone number (Calling Line  
5 Identity.)

According to another embodiment of the invention the changed message delivery function is operative to augment or replace the message with pre-stored information.

10 According to another embodiment of the invention the changed message delivery function is operative to convert part or all of the message to audible form and to deliver the converted message to the recipient by suitable means, such as delivery to voice mail or outdial to a telephone, or delivery to a server with alerting of the user to dial in and collect the message.

15 According to another embodiment of the invention the changed message delivery function is operative to replace the message with pre-stored audio and to deliver the audio to the recipient by suitable means, such as delivery to voice mail or outdial to a telephone, or delivery to a server with alerting of the user to dial in and collect the  
20 message.

According to another embodiment of the invention the changed message delivery function is operative to replace the message with pre-stored audio and to deliver the audio to the recipient by suitable means, such as delivery to voice mail or outdial to a telephone, or delivery to a server with alerting of the user to dial in and collect the message. The audio may be pre-recorded personal, audio, audio provided by a service provider, a celebrity greeting or the like.  
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According to another aspect of the invention there is provided a telecommunications  
30 services method for use with a telephone messaging system, the method comprising:

recognising a predefined arrangement of one or more predefined characters in one or more predefined positions in the body of a message being submitted to the telephone messaging system; and

5 selecting, in response to recognition of the predefined arrangement, a function required by the sender of the message so as to change the normal message delivery function of the telephone messaging system thereby to provide a change in the message content and/or a change in the routing of the message and/or a change in the method of delivery.

10 Further aspects of the invention provide a computer program for carrying out the above method, and a storage medium on which such computer program is stored.

The invention will now be described by way of example with reference to the accompanying drawings in which:

15 Figure 1 is a block diagram of one embodiment of the invention allowing information to be forwarded to an email address; and

Figure 2 is a block diagram of another embodiment of the invention in which voice calls may be out dialled and pre-recorded audio played to a recipient.

20 Figure 1 shows an embodiment of one aspect of the invention suitable for a GSM network that may be used to implement a changed message delivery function that is operative to forward information in appropriate format to a pre-selected email address. A mobile station (1) is connected to a telephone network and is associated with a

25 Mobile Switching Centre MSC (2). A text message Router (3), which may be in the form of a Transaction Converter manufactured by Telsis (RTM) Limited, is operable to intercept messages transmitted between the MSC (2) and the message Service Centre (4.) An attached database (5) allows the router to look up email addresses from telephone numbers. The router is connected to an email interface (6) that is able to

30 format and transmit messages as email.

Figure 2 shows an embodiment of one aspect of the invention suitable for a GSM network that may be used to implement a changed message delivery function that is operative to generate outdialled voice calls from a switch (6) and to play pre-recorded audio to the recipient. A mobile station (1) is connected to a telephone network and is associated with a Mobile Switching Centre MSC (2). A text message Router (3) is operable to intercept messages transmitted between the MSC (2) and the message Service Centre (4.) An attached voice switch (6) allows the router (3) to cause outdialled voice calls to be made to voice mailboxes or to destination telephone terminals. The switch (6) is connected to a store or database (5) that contains the audio to be played to the recipient. As in Figure 1, the router (3) may be constituted by a Transaction Converter manufactured by Telsis (RTM) Limited.

Text messages transmitted towards the message service centre SC (4) are directed via the text message Router (3) using well known routing techniques. For example the switching centres (MSCs) in a GSM network may typically be programmed to perform global title translation on Short Messages so that these messages are routed to the text message router (3) instead of directly to a service centre. In this way all messages destined for the service centre (4) are sent via the text message router (3). In a practical realisation, several routers may be required. The router (3) examines the body of each message to determine whether one of a set of specific text keys is present in a predefined position in the text message. The router (3) may also use source or destination address information to filter the messages so that only a certain subset of messages that pass through the router (3) have their text content examined. This would be advantageous in reducing the processing load on the router (3), for example in situations where a proportion of text messages passing through the router (3) are destined for certain types of SMS host applications such as voting, where message modification according to embodiments of the invention may not be applicable.

The router (3) examines messages passing through the router that are deemed applicable to the message modification function. If a specific text key is not present in the body of the message, then the message is routed on transparently to its destination,

either via a service centre, or by direct delivery from the router (3) to the destination MSC.

If a specific text key is present, then the key is removed, and the router (3) causes the message to be modified in a manner that is specified by the particular key detected. Examples of the types of modification include re-routing, diversion, conversion of content to an alternative medium, content substitution, replacement of the content by pre-stored content in the same or an alternative medium, delayed delivery and the like. A common factor of the modifications that may be made is that they affect the behaviour or characteristics of the message in respect of the recipient.

An example application is now described in detail, with reference to Figure 1, where the particular modification performed by the embodiment of the invention causes the message to be delivered by email instead of, or in addition to, delivery by normal means.

Referring to Figure 1, text messages transmitted towards the message service centre SC (4) are intercepted by the text message Router (3). The router examines the body of each message to determine whether a specific text key is present. If the key is not present, then the message is routed on transparently to its destination, either via the service centre (4), or by direct delivery from the router (3) to the destination MSC. If the key is present, then the key is removed, and the router (3) accesses an attached database (5) to determine the associated email address for the message. The database (5) provides a mapping between destination MSISDN numbers, such as are specified in the text message, and email addresses. The association between email address and telephone number may be user-provisioned by means of a text message service, a web interface or the like. If a mapping exists in the database (5), the message and the email address are passed to the email interface (6), formatted as an email and transmitted to the defined email address via an external data network (not shown). If mapping does not exist in the database (5), the sender may be informed by a text message, or by a modified acknowledgement to his transmission, and the message is routed on transparently

to its destination, either via the service centre (4), or by direct delivery from the router (3) to the destination MSC.

In a preferred embodiment the specific key that the sender uses to indicate that the message is to be converted to email comprises the two characters “E.” at the start of the message body. These are both easy to enter on most mobile telephones, and easy to remember. These two characters only reduce the available message size for a single SMS message from 160 to 158 characters. The user does not need to remember the email address of the chosen recipient. Provided he has the mobile telephone number he can choose the method of delivery as SMS or email. If the recipient has provisioned an email address in the database then messages prefixed with “E.” will be converted to email with the prefix characters removed, and sent to the associated email address. If the address is not present, invalid, or otherwise unusable, then an error message may be returned by SMS to the sender, and the text message is passed on as though the prefix had not originally been present. Messages arriving at the router (3) with no prefix are passed transparently to the service centre (4). Optionally direct delivery to the destination MSC may be attempted by the router (3), with the message only being passed to the Service Centre if this is unsuccessful.

In an alternative embodiment, messages may be sent to the destination telephone number in addition to being sent as email.

Provisioning of email addresses to the database (5) may be carried out in several ways. In a preferred embodiment, a text message formatted according to a predefined syntax may be sent to a predefined number e.g. a shortcode. This would cause the message to be terminated by the text message router (3) and the database (5) to be updated with the subscriber's CLI and the given email address. In an embodiment comprising more than one router, the database (5) may be shared between routers. In this case the database (5) may be connected indirectly to the routers, for example via a text Service Control Point (SCP.).

In another embodiment, database provisioning may be carried out via a web interface.

Alternative implementations of the invention may be used, such that specific keys entered by the user at a predefined place in the message body cause the text message router to implement other functions. Examples are —

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- Key “L2” could cause the router to substitute the CLI for the subscriber’s Line 2 for the CLI of the text message, so that the originating number presented to the recipient corresponds to the sender’s second line. This would be useful for subscribers with two lines on their mobile terminal, where handset functionality prevents SMS being sent with the line 2 number as CLI.

10

- Key “VM” could indicate to the router that the message is to be converted to voice format, using a text to speech convertor, and delivered to a voice mail number associated with the recipient’s telephone number. This could be useful for allowing SMS messages to be converted into a form suitable for delivery to non-SMS capable telephone numbers, e.g. fixed lines.

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- Key “@1” could indicate to the text message router that the message is to be delivered to a predefined group of recipients, where the key also identifies which group. The key may be numeric or alphanumeric.

20

- Key “A.” could indicate to the text message router that the message is to be archived to an email address associated with the sender in addition to being delivered to the recipient.

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- Key “F.” could indicate that the message is to be delivered directly to the screen of the recipient’s terminal. This functionality is now being exploited by SMS hosts but is not yet available for person-to-person messaging. The transport of this message type is standard, so the router can manipulate the attributes of the message to cause it to be so displayed.

- Key “\*123” could indicate that pre-stored audio item no 123 (from a published catalogue or personal audio store) for example is to be substituted for the message and delivered by voice means. This could either be into a voice

mailbox associated with the recipient's telephone number, or to a server capable of outdialling to the recipient for the purpose of delivering the message.

5 • Key "ADR" could indicate that the sender's address is to be substituted for the message body and sent to the destination number, optionally with the sender's CLI suppressed.

It would also be possible to combine pre-stored content with variable content taken from the message body to make a composite message for delivery. The combination could be in the text domain, the voice audio domain or another medium.

10 It would also be possible for the syntax to permit multiple keys in the same message to be recognised by the text message router, and for one or more of the indicated functions to be performed on the message.

The present invention is distinct from previously-proposed systems which make use of a specific text key in the message body to modify a single characteristic associated 15 with the transmitted message, that causes the network to send a delivery receipt back to the sender once the message is delivered. This functionality benefits only the sender, and does not modify the user experience of the recipient in any way. Indeed the recipient is unable to tell that the sender invoked the function. In contrast embodiments of the present invention allow the sender to modify the user experience of the recipient 20 in various ways, and offer the possibility of attractive new services.

A key attribute of embodiments of the invention is that the described services and other like functions can be invoked on behalf of the recipient without the sender having to know any special telephone numbers. Traditionally these types of services would be implemented by the sender dialling a specific different number for each 25 feature and interacting with a service. In the present invention the message is always directed at the recipient's telephone number, and the specific modification required is specified by easily memorable text keys that are inserted in an intuitive way into the body of a text message.

In so far as the embodiments of the invention described above may be implemented, at least in part, using software-controlled processing apparatus, it will be appreciated that a computer program providing such software control and a storage medium by which such a computer program is stored are envisaged as aspects of the invention.

CLAIMS

1. Telecommunications services apparatus for use with a telephone messaging system, the apparatus comprising:
  - 5 means for recognising a predefined arrangement of one or more predefined characters in one or more predefined positions in the body of a message being submitted to the telephone messaging system; and
  - 10 means responsive to recognition by the recognising means to select a function required by the sender of the message so as to change the normal message delivery function of the telephone messaging system thereby to provide a change in the message content and/or a change in the routing of the message and/or a change in the method of delivery.
- 15 2. Apparatus according to claim 1, wherein the changed message delivery function is operative to forward at least part of the message in appropriate format to a pre-selected email address.
- 20 3. Apparatus according to claim 1, wherein the changed message delivery function is operative to attempt message delivery one or more times to the destination address and, in the event that such delivery is unsuccessful, to forward at least part of the message in appropriate format to a pre-selected email address.
- 25 4. Apparatus according to claim 1, wherein the changed message delivery function is operative to attempt message delivery one or more times to the

destination address and in addition to forward at least part of the message in appropriate format to a pre-selected email address.

5. Apparatus according to claim 1, wherein the changed message delivery function is operative to attempt message delivery one or more times to the destination address such that the message is caused to appear automatically on the display of the destination terminal.
10. Apparatus according to claim 1, wherein the changed message delivery function is operative to replace part or all of the message with information representative of the sender's address.
15. Apparatus according to claim 6, wherein the message delivery function is also operative to suppress delivery of the user's calling line identity (CLI).
20. 9. Apparatus according to claim 1, wherein the changed message delivery function is operative to convert part or all of the message to audible form, and to deliver the converted message to the recipient by delivery means.
25. 10. Apparatus according to claim 9, wherein the delivery means is operative to deliver the converted message to voice mail or to outdial to a telephone

number, or effect delivery to a server with alerting of the user to dial in and collect the message.

11. Apparatus according to claim 1, wherein the changed message delivery function is operative to replace the message with pre-stored audio and to deliver the audio to the recipient by delivery means.  
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12. Apparatus according to claim 11, wherein the delivery means is operative to deliver the audio to voice mail or to outdial to a telephone number, or effect delivery to a server with alerting of the user to dial in and collect the message.  
10
13. Apparatus according to claim 11 or claim 12, wherein the pre-stored audio is pre-recorded personal audio, audio provided by a service provider, or a celebrity greeting.  
15
14. Apparatus according to any one of the preceding claims, wherein the recognising means comprises a text message router operative to determine whether the body of the text message includes one of a set of specific text keys in a predetermined position in the text message.  
20
15. Apparatus according to claim 14, wherein the text message router is operative to filter the text messages in accordance with source or destination addresses of the text messages so that only a subset of messages are subject to recognition of the predefined arrangement of characters.  
25

16. Telecommunications services apparatus for use with a telephone messaging system, the apparatus being substantially as herein described with reference to and as illustrated in the accompanying drawings.
17. A telecommunications services method for use with a telephone messaging system, the method comprising:

5           recognising a predefined arrangement of one or more predefined characters in one or more predefined positions in the body of a message being submitted to the telephone messaging system; and

10           selecting, in response to recognition of the predefined arrangement, a function required by the sender of the message so as to change the normal message delivery function of the telephone messaging system thereby to provide a change in the message content and/or a change in the routing of the message and/or a change in the method of delivery.
18. A telecommunications services method for use with a telephone messaging system, the method being substantially as herein described with reference to and as illustrated in the accompanying drawings.
- 15           19. A computer program for implementing a method according to claim 17 or claim 18.
20. A storage medium storing a computer program according to claim 19.



INVESTOR IN PEOPLE

Application No: GB 0314508.3  
Claims searched: 1 to 20

Examiner: Andrew Hole  
Date of search: 13 November 2003

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1 to 5, 14, 15, 17, 19, & 20.	WO 1998/056195 A2	(NOKIA) See Fig 6 and page 6, line 3 onwards.
X	1 to 5, 14, 15, 17, 19, & 20.	US 6151507	(LAIHO et al.) See Figures 4c and 6c and column 14, line 49 to column 18, line 40 and column 26, line 25 to column 28, line 34.
X	1 to 5, 14, 15, 17, 19, & 20.	US 5946629	(SAWYER et al.) See Fig 3 and column 5, line 41 to column 6, line 55.
X	1, 6, 7, 17, 19, & 20.	WO 2002/047320 A1	(CHIKKA) See page 28, lines 20 to 28 and page 43, line 24 to page 44, line 6.
X	1, 8, 17, 19, & 20.	US 5784001	(DELUCA et al.) See Figures and column 3, line 17 to column 5, line 14.
X, E	1, 2, 5, 17, 19, & 20.	WO 2002/063838 A2	(SIEMENS) See abstract.
X, E	1, 8, 9, 11 to 13, 17, 19, & 20.	GB 2376610 A	(H-P) See Figures and page 5, line 4 to page 12, line 22.
X	1, 9, 10, 14, 15, 17, 19, & 20.	"SMS to Voice Message 1.0" See printout and URL: <a href="http://www.vasic.com/demo/sms/">http://www.vasic.com/demo/sms/</a>	

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



INVESTOR IN PEOPLE

**Application No:** GB 0314508.3  
**Claims searched:** 1 to 20

**Examiner:** Andrew Hole  
**Date of search:** 13 November 2003

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>V</sup>:

H4L

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

G06F, H04B, H04M, H04L, H04Q

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, PAJ, TXTE